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(54) **Method and apparatus for settlement of accounts by IC cards.**

(57) An IC card (6) has a card information memory area wherein there are written a master public key nA, card secret keys pU and qU, a card public key nU, a card identification number IDU, and a first master digital signature SA1 for information including the card identification number. An IC card terminal (2a,2b) has terminal information memory area wherein there are written a master public key nA, terminal secret keys pT and qT, a terminal public key nT, a terminal identification number IDT, and a second master digital signature SA2 for information including the terminal identification number IDT. When inserted into the IC card terminal, the IC card

sends thereto the data nU, IDU, and SA1. The IC card terminal verifies the digital signature SA1 by the master public key nA and, if it is valid, transmits the data nT, IDT and SA2 to the IC card. The IC card verifies the digital signature SA2 by the master public key nA and, if it is valid, transmits information corresponding to the current remainder value V to the IC card terminal. The IC card terminal makes a check to see if the received information corresponding to the remainder value V is appropriate, and if so, becomes enabled for providing a service.

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## EUROPEAN SEARCH REPORT

Application Number  
EP 93 11 4917

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
A	EP-A-0 479 617 (TOSHIBA) * abstract *	1, 15	G07F7/10 G06F15/00
A	EP-A-0 500 245 (TOSHIBA) * abstract; claim 1 *	1, 15	
E	EP-A-0 613 105 (FRANCE TELECOM)  * abstract * * column 2, line 37 - column 3, line 26 *	1, 10, 13, 15, 17-20, 22-26	
A	EP-A-0 494 796 (NCR CORPORATION)  * abstract *	1, 10, 13, 15, 17-20, 22-26	
A	EP-A-0 138 320 (VISA U.S.A.)  * abstract * * page 1, line 1 - page 5, line 24 * * claim 1 *	1, 10, 13, 15, 17-20, 22-26	TECHNICAL FIELDS SEARCHED (Int.Cl.5)  G07F G06F
A	EP-A-0 475 837 (GEMPLUS CARD INTERNATIONAL)  * abstract *	1, 10, 13, 15, 17-20, 22-26	
A	EP-A-0 063 794 (SIEMENS)  * abstract *	1, 10, 13, 15, 17-20, 22-26	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 14 February 1995	Examiner Tacoen, J-F
<b>CATEGORY OF CITED DOCUMENTS</b> X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document  T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons  & : member of the same patent family, corresponding document			



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## EUROPEAN SEARCH REPORT

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EP 93 11 4917

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.5)
A	EP-A-0 064 779 (SVENSKA PHILIPSFÖRETAGEN)  * abstract; claims 1,2 * ----	1, 10, 13, 15, 17-20, 22-26	
A	EP-A-0 082 958 (IBM)  * abstract; claim 1 * ----	1, 10, 13, 15, 17-20, 22-26	
A	EP-A-0 422 230 (MATSUSHITA)  * abstract * ----	1, 10, 13, 15, 17-20, 22-26	
A	EP-A-0 281 059 (SIEMENS)  * abstract * -----	1, 10, 13, 15, 17-20, 22-26	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.5)
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<b>CATEGORY OF CITED DOCUMENTS</b> X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document  T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons  & : member of the same patent family, corresponding document			



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### CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claims:
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

### LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:

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- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respects of which search fees have been paid, namely claims:
- ☐ None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



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#### LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims 1-9,15,16: Settlement of charges
2. Claims 10-12 : ~~Creating~~ of IC card
3. Claims 13,14 : Password registration
4. Claims 17,19,  
22,25 : IC card terminal
5. Claim 18 : IC card
6. Claims 20,23,24,  
26,27 : IC card system

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